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ABSTRACT

These proceedings from a January, 1993, forum on the education of children with attention deficit disorder (ADD) focuses on the activities of five federally funded centers: the Arkansas Children's Hospital Research Center on Attention Deficit Disorder; the University of Miami (Florida) Center for Research on Attention Deficit Disorder; the Research Triangle (North Carolina) Institute, Attention Deficit Disorder Intervention Center; the University of California, Irvine, Attention Deficit Disorder Intervention Center; and the Federal Resource Center at the University of Kentucky. Researchers from each center presented brief reviews of their approaches and findings which were followed by roundtable discussions. These presentations are summarized in these proceedings and covered the following topics: (1) promising practices in identifying and educating children with ADD (Barbara Burcham and Laurance Carson of the Kentucky Center); (2) assessing children with ADD for identification and classification (Roscoe Dykan et al. from the Arkansas Center); (3) characteristics and educational placement of children with ADD (James D. McKinney et al. from the Florida center); (4) educational interventions for children with ADD (Thomas A. Fiore et al. from the North Carolina center); and (5) medical intervention for children with ADD (James Swanson, California center). Two additional chapters report on participant discussion of information dissemination and product development and of related initiatives for children with ADD. (Some chapters include references.) (DB)

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Proceedings of the
Forum on the

Education of Children with Attention Deficit Disorder

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Proceedings of the
Forum on the

Education of Children with

Attention Deficit Disorder

Washington, D.C.

January 27–29, 1993

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Education of Children with Attention Deficit Disorder

The proceedings that follow reflect the deliberations of participants and presenters attending the Forum on the Education of Children with Attention Deficit Disorder in Washington, D.C., January 27–29, 1993. The Forum was sponsored by the Division of Innovation and Development (DID), Office of Special Education Programs (OSEP), Office of Special Education and Rehabilitative Services (OSERS), U.S. Department of Education. The Forum was designed to provide an opportunity for people involved in educating and treating children with attention deficit disorder (ADD) to discuss collaboratively the research syntheses and survey of promising practices developed by five federally funded centers. It was also intended to clarify participants' further information needs and suggest ways to reach target audiences with information about how better to educate and treat children with ADD.

The behavior of children with ADD is characterized by inattention and impulsivity; a subset of these children experience hyperactivity as well. As a result of their disorder, children with ADD do not respond in the same way as other children to instructional and management techniques. They are often disruptive and are at risk for academic and social failure unless taught and managed appropriately. Therefore, attention deficit disorder in children represents a serious threat to their effective and successful learning. One Forum panel member noted that children with ADD often have a strong desire to learn and interact with their peers but are prevented from doing so by their own distractibility. Therefore, they are at risk of becoming hopeless and "lost to their own future."

To address successfully these children's special needs, parents and educators require information that will help them understand and effectively

manage the disorder. They need to understand how ADD can be assessed and properly diagnosed, what to expect from medication for children with ADD, and the most promising educational strategies that will help them work successfully with these children. Forum panel members emphasized that when parents and educators are armed with a strong base of current knowledge, they *can* succeed in ensuring that children with ADD become productive, contributing citizens.

When they are armed with a strong base of current knowledge, parents and educators can succeed in ensuring that children with ADD become productive, contributing citizens.

Unfortunately, however, information about educating children with ADD has not been readily available or communicated in a manner that is useful to parents and educators. Therefore, in Fiscal Year 1991, Congress charged the U.S. Department of Education with synthesizing and disseminating information on current knowledge about how best to serve children with ADD. In response, OSEP funded four centers to synthesize the existing research knowledge in assessment and interventions to meet the needs of children with ADD. These centers were designed to increase the awareness of educators, researchers, and parents of research-based interventions and assessment strategies for children with ADD. The centers were asked to review existing research across education, psychology, and medicine and to synthesize it in a manner that would show what is known as well as what is not known about children with ADD. Researchers at each center conducted extensive literature searches, using both automated and traditional search methods. They selected studies for inclusion in their reviews on the basis of relevance to the topic and quality of the research design. The syntheses generally focused on research conducted since 1980.

The centers and the topics of their work discussed at the Forum are as follows:

- **The Arkansas Children's Hospital Research Center on Attention Deficit Disorder** examined identification and assessment research, with a focus on issues related to assessment instruments.

- **The University of Miami Center for Research on Attention Deficit Disorder** examined identification and assessment research, with attention to issues related to operating within educational systems.
- **The Research Triangle Institute, Attention Deficit Disorder Intervention Center** examined intervention research, with a focus on issues related to academic and behavioral interventions.
- **The University of California, Irvine, Attention Deficit Disorder Intervention Center** examined intervention research, especially issues of medication.

A fifth center—**the Federal Resource Center (FRC) at the University of Kentucky**—was charged with identifying promising practices and programs for serving students with ADD at the state, district, and local levels. In contrast with the centers synthesizing empirical research, the FRC conducted a national search for promising practices and programs that are considered by practitioners to be successful in meeting the needs of children with ADD. The five centers had the further responsibility of disseminating their findings in a manner useful to parents, teachers, and researchers.

Throughout their work, the five centers encouraged the active participation of parents, health care professionals, school personnel, researchers, and clinicians. Through meetings and focus groups, these stakeholders assisted center directors in identifying the critical issues in teaching children with ADD. The research synthesis centers identified six critical issues framed as questions. These questions were as follows:

1. What does the literature suggest concerning numbers and types of children with attention deficit disorder and the implications for their educational needs across the developmental span?
2. What does the literature suggest constitutes an assessment of attention deficit disorder?
3. What does the literature identify as academic and behavioral interventions that work for children with attention deficit disorder?
4. What does the literature suggest about the efficacy of medication for children with attention deficit disorder?

5. According to the research literature, how best can educators organize resources and deliver services to meet the educational needs of children with attention deficit disorder?
6. Based on evidence in the research literature, how can parents, educators, and other professionals (including psychologists and physicians) collaborate effectively in identifying and meeting the needs of children with attention deficit disorder?

The research synthesis center directors determined that sufficient research existed to address only the first four issues.

The continued involvement of the stakeholders mentioned above was reflected by the diverse makeup of Forum participants, who included parents, teachers, school administrators, clinicians, psychologists, physicians, and researchers. Their participation represented a united commitment to meeting successfully the challenge of educating children with ADD.

Patricia Guard, acting director of OSEP, noted in her introductory remarks that, "We *all* agree we need to serve these children. The question is how best to do so." Bonnie Feli, president-elect of Children with Attention Deficit Disorders (CHADD), underscored this need in her introductory presentation as a member of a panel of parents and educators. She added that success is often determined by whether parents and educators have a strong base of current knowledge available to them; children with ADD are given a consistent opportunity to overcome their disability and learn; and parents, educators, and clinicians develop strong teamwork to assist children with ADD at home and in school.

We all agree we need to serve these children. The question is how best to do so.

As Ellen Schiller, chief of directed research for DID, explained, "To educate children with attention deficit disorder, all perspectives and approaches for knowing need to be examined and valued." The participation of many different individuals and organizations at the Forum provided these diverse perspectives.

Researchers from each of the centers presented brief reviews of their approaches and findings.[1] These presentations were followed by roundtable discussions by participants and reports to the entire group on each table's discussion.

Each group of participants brought a different body of knowledge about children with ADD to the Forum, and that diversity was one of the Forum's greatest strengths. The clinicians and researchers provided empirical research and knowledge from the literature. The parents, teachers, and administrators contributed their shared wisdom and practical experience in working with children with ADD. By merging this practice, experience, and research information at the Forum, the participants had the opportunity to share their varied perspectives, experience, and knowledge and to begin to build a strong, unified, and useful base of knowledge about children with ADD. Participants welcomed this opportunity to engage in a productive exchange of ideas and to become creative problem solvers in addressing the critical issues involved in working with these special children.

Participants also had the chance to create linkages across communities and to share resources for improving the outcomes of children with ADD. Finally, they were able to clarify their own further information needs and to suggest ways to reach out to target audiences regarding how better to educate and treat children who have the disorder.

The Forum is the first in a series of activities to be undertaken by DID to disseminate this important information. By building on the strengths and abilities of each of the communities that participated in the Forum and creating opportunities for ongoing interaction and exchange, we will continue to expand our understanding of ADD. We hope the Forum will encourage others to create collaborative efforts to improve the educational progress of children with ADD.

The Forum is the first in a series of activities to be undertaken by DID to disseminate this important information. We hope it will encourage others to create collaborative efforts to improve the educational progress of children with ADD.

[1] Because of time constraints, the centers' presentations of their research syntheses were condensed. More information on the reports may be obtained from the Chesapeake Institute, as indicated at the end of each chapter.

CHAPTER 1

Promising Practices in Identifying and Educating Children with Attention Deficit Disorder

Barbara Burcham and Laurance Carlson, Federal Resource Center, University of Kentucky

Overview

The Federal Resource Center (FRC) worked with school personnel, parents, health care professionals, family-support professionals, and researchers to locate, develop criteria for, and evaluate school-based practices that show promise for educating children with attention deficit disorder (ADD). The center sought practices that focused on school-based identification methods and intervention strategies. The FRC recruited 25 consultants from national organizations that represent the five groups listed above to guide the work. Eleven of these consultants served as a core work team and were directly involved in plans to locate, evaluate, and choose promising practices.

The FRC conducted a national search for educators engaged in promising work with students with ADD. Of an initially identified 504 individuals or groups from 43 states, 146 submitted written descriptions of their work. Consultants chose 26 practices from 18 states that showed strong promise in serving students with ADD and their families. Selection criteria required that the practices be replicable, include early detection, address the three major components of ADD (inattention, impulsivity, and hyperactivity), be collaborative, be sensitive to cultural diversity, have a positive impact on the children, be practical, address medication issues, and enhance both learning and behavioral goals.

The 26 promising practices focused primarily on students in elementary and middle schools. The center found no promising practices that addressed the specific needs of adolescents with ADD, because none were nominated

during the search process. There were few practices that dealt with preschool children or that addressed issues relevant to students with ADD from diverse cultural and linguistic backgrounds. Among the selected projects, eight are identification practices and 18 are intervention practices for elementary and middle school students.

Findings

The 26 promising school-based practices used varied approaches to educating students with ADD, including unique identification methods, behavioral interventions, organizational strategies, instructional interventions, and training programs. The approaches had several common features.

The 26 promising school-based practices used varied approaches to educating students with ADD, including unique identification methods, behavioral interventions, organizational strategies, instructional interventions, and training programs. The approaches had several common features.

Practices that showed promise focused on the three major characteristics of ADD, had a strong component of training for working with children with ADD, were practical, and changed with changing needs. They also assessed students with ADD in a collaborative way; developed and implemented interventions; met the needs of students with ADD in the least restrictive environment—often in the regular classroom; saw ADD as a disability; and were supported by the school district's administration.

Features that seemed essential in promising identification practices included using a team approach in evaluating the impact of ADD on the educational process, involving families throughout the identification process, and evaluating interventions as part of the assessment data. Also essential were addressing the three major characteristics of ADD in the evaluation, identifying associated or coexisting conditions that contributed to students' difficulties in school, addressing medication issues, and integrating results of school-based identification procedures into an educational improvement plan for the student.

Promising intervention practices also had common features. They used behaviorally based techniques to manage student behavior, emphasized positive and proactive intervention strategies, and focused on student

strengths as well as needs in designing and implementing strategies. They also were implemented across settings rather than for only one part of the day, were maintained over time, were modified as needed, and positively affected students and their families.

Promising Practices

The following promising practices were identified:

Identification

- **Anchorage, Alaska**—In an effort to streamline the process of managing referrals to special education for children with ADD, a "gating" procedure was used to determine the level of assessment to be conducted by the school psychologist and nurse. Sufficient data were collected through this process to determine eligibility for special education services, provide adequate information to physicians, and plan educational programs for children with ADD.
- **San Diego, California**—A five-year grant from the Maternal and Child Health Program (Title V of the Social Security Act) allowed the San Diego school system to create a Project for Attention-Related Disorders. The project was designed to (1) improve the knowledge of school personnel, parents, physicians, and community service providers; (2) improve the coordination of school and community services for ADD; and (3) establish a school-based system for identifying, evaluating, and managing children with ADD.
- **Norwich, Connecticut**—A school-based team of professionals, along with the family, designed and monitored interventions within the regular school program in this practice. If more intensive services were needed, the child was referred to a planning and placement team, which conducted a more formal evaluation that consisted of 14 specific assessment tests. School psychologists summarized this assessment information and the team made intervention recommendations for the child.
- **Fort Lauderdale, Florida**—The school system developed plans for assessing children under Section 504 of the Rehabilitation Act and

designated full-time central office administrators to coordinate efforts for assessment of children with ADD.

- **Louisville, Kentucky**—Four school psychologists developed a districtwide vehicle for assessing children suspected of having ADD. The practice included a system for requesting an assessment; a preassembled packet distributed to referral sources; and a system for responding to the assessment, integrating information obtained, and following up with parents, community service providers, and the school.
- **Salisbury, North Carolina**—In this school system, a support teacher was hired to assist in correctly identifying and intervening with children with ADD. The support teacher's role ranged from creating schoolwide policy and procedures to consulting with teachers and families.
- **Raleigh, North Carolina**—The Wake County school psychology staff developed a screening procedure to assess children with ADD appropriately and consistently. A screening procedures manual was developed and distributed to all county schools that described assessment and intervention strategies. The procedure included documentation of interventions; parent involvement; and performance of developmental and medical histories, observations, and educational testing. In-service training was also available to the schools.
- **Sturgeon Bay, Wisconsin**—Regular education teachers and parents worked collaboratively to clarify problems, review testing results, and develop intervention plans. If medication was used, a two-week monitoring plan was developed and shared among the physician, parents, and school counselors. Community networking systems were also established to share resources and information.
- **Kenosha, Wisconsin**—This school system developed a districtwide plan to meet the unique needs of students with ADD in a regular education setting. Mechanisms included

- **Staff development**—In-service training (16 hours) was provided for regular and special education teachers and support staff.
- **Classroom strategies**—Teachers used a range of behavior modification techniques and modified the environment and materials to enhance instruction.
- **Educational planning**—An individualized education plan was developed for each child with ADD.
- **Counseling and communication**—A plan for communicating with families and physicians was developed, and a program consultant for children with ADD was hired to assist in evaluation and intervention.

Behavioral Interventions

- **Irvine, California**—In this schoolwide practice, children were screened for ADD by means of teacher ratings, parent interviews, and observational data. Identified students selected for the program received assistance from a paraprofessional aide in a regular education classroom for 12 hours per week; the aide taught them social and cognitive skills. Children who received this training and the services of the aide showed significant improvement in these skills.
- **Suffield, Connecticut**—This school system designed a procedure to increase appropriate behavior and academic performance in children with ADD in both special and regular education middle school settings. The procedure included daily individualized checklists that were directly related to children's specific needs and a specific strategy to keep parents informed on a daily basis of their children's schoolwork and behavior.
- **Jacksonville, Florida**—This practice revolved around a "target behavior of the day" system to promote a positive classroom environment for elementary and middle school students. Students identified positive behaviors and were rewarded by the teacher for displaying them.
- **Bradenton, Florida**—A "level" system was used in this practice to improve student behavior and academic productivity in a self-

contained classroom of children with serious emotional disturbances, many of whom also have ADD. Upon entering the program, children began at level 1, which has specific rules and consequences for breaking them. Points were earned, and movement to the next level was contingent on prior weeks' performance. The practice included daily feedback and a reinforcement program.

- **Des Moines, Iowa**—A behavior modification program using positive reinforcement and training was developed for use with preschool children. Teachers generated classroom rules, reviewed them daily, and practiced them with the group. In addition, photographs of students displaying appropriate behaviors were posted. Appropriate behaviors were rewarded immediately, and inappropriate behaviors were ignored. Daily notes were sent to parents.
- **Omaha, Nebraska**—This practice was a school and home behavior management strategy for classroom intervention. It involved targeting specific behaviors and reinforcing them through a system of earned points and privileges and increasing the amount of contact between teachers and students. After training in the use of the system by a case manager, teachers and family worked cooperatively to reward appropriate behavior.

Organizational Strategies

- **Lake Villa, Illinois**—This practice involved a multidisciplinary school conference to solve problems and set goals for a student with ADD. Intervention plans and weekly progress reports were shared in regular conferences with both parents and the student. The student was involved in all ongoing planning and decision making. A case manager system was used to coordinate implementation of the work at school and with the family.
- **Boardman, Ohio**—This practice helped a special education teacher develop organizational skills for students with ADD, increase completion of assignments, and improve communication between home and school. Both the teacher and parents monitored a homework assignment sheet closely, and children attended evening homework

classes if they failed to finish their homework twice in a 10-day period.

- **Drexel Hill, Pennsylvania**—In this practice a middle school teacher provided visual aids to help students with ADD organize and complete notebook assignments in geography. This practice also helped communicate with parents and improve their confidence in their children's performance. Costs and materials were negligible, and the practice can be easily replicated.

Academic Interventions

- **Orlando, Florida**—Cooperative learning methods were employed in a heterogeneous classroom that included children with ADD, cotaught by a regular teacher and a special education teacher. Cooperative learning groups were established after the teachers reviewed the children's records, completed a student inventory, assessed the classroom climate and materials, and contacted parents.
- **Baton Rouge, Louisiana**—A schoolwide approach to meeting the needs of children with ADD was used in this practice. Each child with ADD received a cognitive, academic, and emotional evaluation. Children were placed in reduced-size classrooms, pretested on standardized tests, and instructed with multisensory teaching techniques that integrated all curriculum areas. A comprehensive contingency management program was also used. The principal and instructional specialist supported teachers' efforts via assessment, staff development, and individualized work with students. Extensive in-service training regarding ADD was provided to teachers, and monthly parent meetings were held. Information indicated that 99 percent of students in the program were successful.
- **Sandy, Utah**—In an effort to increase students' work productivity and reduce their disruptive behavior, this practice involved use of a tic-tac-toe game tied to work assignments to reinforce positive behavior and academic progress. Group and individual contingencies were employed. The intervention was implemented in regular and special education settings.

- **Colorado Springs, Colorado**—A five-hour in-service training program was provided for parents and educators who were involved with children with ADD. Community members, such as local physicians, and parents participated as trainers in the program.
- **Towson, Maryland**—To address the challenges associated with educating children with ADD, the Baltimore County public schools undertook a variety of activities. The school system developed literature to be distributed to every parent and teacher in the county and held special faculty meetings at the school level to present information on ADD. A 10-hour training program and forum for parents was provided at three high school sites. School staff worked collaboratively with the Parent-Teacher Association to develop workshops on community liaison for assisting children with ADD. The local director of Children with Attention Deficit Disorders served as a presenter for in-service training.
- **Billings, Montana**—Training programs for parents and educators were provided by a school psychologist. The eight-hour parent workshop provided strategies for including families in interventions for children with ADD. The 15-hour educators' workshop was approved by Eastern Montana College for graduate or undergraduate credit.
- **Reno, Nevada**—A 16-hour in-service program for school teachers, counselors, psychologists, and nurses was designed to foster effective educational interventions for children with ADD. The in-service program was planned to help teachers understand the disorder in a social environment and to provide them with practical information regarding interventions. A variety of community resources was used to assist in the workshops.
- **North Canton, Ohio**—This practice reflected the efforts of a parent support group to train other parents, educators, and the community about ADD. The group's services included production and dissemination of newsletters, a handbook on ADD, and information packets; provision of videotapes and speakers at in-service meetings;

presentations at workshops and conferences; ongoing research on medical, educational, and legislative activities; and participation in local regional, state, and national organizations related to ADD.

Conclusions

It is readily apparent that no single practice can meet the needs of every student with ADD. Recognizing this fact, the FRC was able to identify a number of sites where school professionals were effectively meeting these students' needs. However, it should be noted that the search conducted by the center did not locate any promising practices specific to meeting the needs of adolescents with ADD. In addition, practices specific to identification of and intervention with preschool-age children and practices addressing issues relevant to students with ADD from diverse cultural and linguistic backgrounds were limited.

There is much work to be done in meeting the educational needs of students with ADD in the public schools of America. However, it is clear from this project that there is a body of craft knowledge among the nation's public school educators that does effectively address the special educational needs of students with ADD. It is hoped that by sharing information regarding these promising practices, educators will become more adequately equipped to serve students with ADD and to assist their families.

Excerpted from:

Burcham, B. and Carlson, L. *Promising Practices in the Identification and Education of Children with Attention Deficit Disorder*. Louisville, KY: University of Kentucky, 1993.

For more information about this report, please write to:

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CHAPTER 2

Assessing Children with Attention Deficit Disorder for Identification and Classification

Roscoe Dykman, Ph.D., Thomas J. Raney, and Peggy T. Ackerman, Arkansas Children's Hospital

Overview

The Arkansas Children's Hospital research group examined identification and assessment research, focusing on assessment instruments and procedures. To develop a list of critical issues regarding children with attention deficit disorder (ADD) on which to focus their work, the researchers organized three meetings—one in the Delta Region, a relatively poor rural and agricultural area, and two in metropolitan Little Rock. All meetings involved parents, teachers and administrators, school psychologists, and family physicians. Little Rock meetings included a child psychiatrist, pediatricians, a developmental psychologist, and an Arkansas Department of Education representative. Concurrent library research was conducted to answer questions from the meetings and expand the critical issues list. Critical issues in ADD on which meeting participants sought more information included the following:

- A history of the ADD and attention deficit disorder with hyperactivity (ADHD)[1] concepts and their relation to minimal brain dysfunction.
- Definitions of ADD and ADHD, including those in the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM-III*, *DSM-III-R*, and an estimate of the *DSM-IV* definition), and diagnostic criteria proposed by different writers and organizations.

[1] The abbreviation ADD usually encompasses attention deficit disorder both with and without hyperactivity. ADHD is used to refer to children with attention deficit disorder with hyperactivity; this condition is sometimes abbreviated as ADD/H. The condition of ADD without hyperactivity is sometimes abbreviated as ADD/WO.

- ADD and ADHD epidemiology and how it varies with survey types and definitions.
- Etiology, including environmental and genetic causes and their interactions.
- Comorbid conditions such as oppositional defiant, conduct, anxiety, and mood disorders.
- Biological associates of ADD and ADHD, such as biochemical and psychophysiological findings.
- Experimental psychological approaches to studying ADD and ADHD.
- Rating-scale literature, especially scales based on national norms.
- Structured interviews that lay people and professionals can administer, and their value in diagnosis.
- Objective tests useful in recommending remedial work for children with ADD and determining whether they also have a learning disability.
- Formal assessment, including assessment of aggression apart from oppositional disorder and hypoactivity that was part of the minimal brain dysfunction concept.

The Arkansas center also conducted an extensive search of the ADD and ADHD literature of the last 10 years to collect relevant studies for entry in its data base for analysis.

Findings

The central focus of the Arkansas presentation was to describe assessment tools for diagnosing children with ADD.[2] The Arkansas group agreed with the approach of the Professional Group for Attention-Related Disorders

[2] The research synthesis from which this presentation was drawn covered a wider range of assessment topics than is presented here. For information on the full report, write to the Chesapeake Institute, as indicated at the end of this chapter.

The central focus of the Arkansas presentation was to describe assessment tools for diagnosing children with ADD. The Arkansas group agreed with the approach of the Professional Group for Attention-Related Disorders (PGARD), which proposes a two-tier assessment process.

(PGARD), as cited in the Children with Attention Deficit Disorders (CHADD) Educators Manual,[5] which proposes a two-tier assessment process.

Tier 1 involves a comprehensive interview with past and present caretakers and teachers to assess the existence of symptoms of ADD in children in different environments and medical information that might be associated with ADD.

Tier 2—determining adverse effects on performance—involves assessing classroom behavior (direct observation over several days by someone other than the teacher), academic productivity relative to a child's IQ (percentage of work completed and percentage completed correctly during written assignments over two weeks), and performance on standard psychoeducational tests that, among other things, help identify learning problems.

Assessment Measures

Rating Scales

The Arkansas researchers identified 42 rating scales used to describe or diagnose children with ADD and ADHD. All provide some type of norms and cite measures of reliability and validity. *Attention Deficit Hyperactivity Disorder: A Handbook for Diagnosis and Treatment* (Barkley, 1990) contains a chapter detailing many rating scales and outlining some of the important properties of rating scales. However, there is no substitute for reviewing the normative data in the test and administration manuals published by the scales' developers.

Among the new instruments available to assess ADHD, the Behavior Assessment System for Children (BASC) and the Attention Deficit Disorder Evaluation Scale (ADDES) seem promising. BASC (Reynolds and Kamphaus, 1992) is a multimethod assessment system that contains a self-report form,

[5] *CHADD Educators Manual* (1993), a look at attention deficit disorder from an educational perspective, by Mary Fowler in collaboration with Russell Barkley, Ph.D.; Ron Reeve, Ph.D.; and Sydney Zentall, Ph.D. A project of the Children with Attention Deficit Disorders (CHADD) National Education Committee, published by CHADD, 499 Northwest 70th Avenue, Suite 308, Plantation, FL 33317, (305) 587-3700.

two rating scales (one for teachers, one for parents), a structured developmental history, and a form for recording and classifying directly observed classroom behavior. ADDES (McCarney, 1989a and 1989b) has a home version and a school version. This scale can be used to screen for ADD in children, measure attention deficit, provide information that may contribute to the diagnosis of ADD, develop program goals and objectives, and identify interventions for children with ADD behavior or performance.

There is not an extensive body of research on these scales. The other rating scales with comparable norms based on national samples are Achenbach's Child Behavior Checklists (CBCL) (Achenbach, 1991), which have been in use much longer and in a relatively large number of ADD and ADHD studies. No other scales have been in use in ADD and ADHD research as long as the Conners scales (Conners, 1969, 1970, 1978, 1982),[1] and most newer scales contain some of Conners' original items in some form. A limitation of the BASC and CBCL is their length. Teachers might prefer the 10-item Conners Teacher Rating Form (1978), which tests for conduct problems, hyperactivity, and inattention-passivity, or the DuPaul ADHD Rating Scale (DuPaul, 1990), which measures inattention-restlessness and impulsivity-hyperactivity. For making a diagnosis, the DuPaul scale is the most valuable as a first-stage classification instrument, providing a categorical diagnosis (ADHD yes or no) and a dimensional one (severity of symptoms). Its usefulness in this capacity is reflected in the fact that this scale was used in *DSM-IV* field trials to rate functioning of children with ADD and ADHD. However, the BASC or CBCL scales should be used for a more detailed description of the individual child. If *DSM-III-R* psychiatric diagnoses other than ADHD are to be assessed, the researchers recommend a diagnostic structured interview.

Other rating instruments useful in assessing children with ADHD include the Children's Global Assessment Scale (Shaffer et al., 1985), which rates the severity of *DSM-III-R* ADHD symptoms. Also, a teacher rating scale

[1] Conners has developed three basic scales, each with different versions: (1) the Conners Parent Rating Scale—original, 1970, and revised, 1978; (2) the Conners Teacher Rating Scale—original, 1969; revised, 1978; and the Iowa Conners Teacher Rating Scale, 1982; and (3) the Conners Abbreviated Symptoms Questionnaire, 1978.

for the *DSM-III-R* disruptive behaviors, which include ADHD, conduct disorder, and oppositional defiant disorder, was developed in 1992. This scale is particularly useful because it considers the other disruptive disorders that frequently overlap ADD and ADHD.

Structured Interviews

Structured interviews are less reliable than assessment methods such as psychological testing and behavioral ratings. However, they are valuable in covering a range of childhood psychopathology, useful in confirming a definition of ADD and ADHD, and valuable in pinpointing comorbid conditions associated with ADD and ADHD. Recommended interview schedules include the revised Schedule for Affective Disorders and Schizophrenia for School-Age Children (K-SADS) (Last, 1986), Kovacs' Interview Schedule for Children (ISC) (Kovacs, 1982), the revised Diagnostic Interview for Children and Adolescents (DICA) (Reich et al., 1991a, 1991b, and 1991c), and the Diagnostic Interview Schedule for Children (DISC) (Costello et al., 1982).

- **K-SADS**, in its fourth revision, is a brief interview form widely used in research and clinical work. It is scorable in terms of *DSM-III* diagnostic criteria and research diagnostic criteria for major affective disorders, including symptoms associated with depression and other disorders. It has reasonable reliability and validity.
- **ISC**, used in several clinical studies, is a semistructured interview for children aged eight to 17 designed to be administered by clinicians familiar with *DSM-III* diagnostic criteria. The instrument was designed mainly to diagnose depression but it can also assess anxiety disorders and ADD and ADHD in children. It involves separate interviews of the parent and child and takes 40 to 60 minutes.
- **DICA** has been recently revised. There are as yet no reliability or validity data for the revision, but the researchers believe it will prove valuable in clinical practice. The DICA generally encourages the examiner to probe for information that goes beyond simple yes and no answers. It requires more skill and training to administer than the

DISC. The older DICA has been shown to be valuable in genetic studies of children with ADD and ADHD.

- **DISC** has a self-report form; the parallel form for parents is the DISC-P. Originally developed by the National Institute of Mental Health for use in epidemiological studies of childhood psychopathology, the DISC has a skip-type structure that reduces interviewing time for children with few symptoms. Items on these forms cover most childhood pathology, including symptom onset, duration, and severity.

The DICA and the DISC have been used to make *DSM-III* diagnoses in research and clinical studies. Various DISC versions have been used in field trials to revise definitions of ADD and ADHD for the *DSM-IV*. These studies involved 440 subjects who were examined once every year for four years, all of whom were referred to clinics and came from diverse clinics nationwide.

Objective Tests

One of the best instruments for assessing intelligence in elementary school children with ADD and ADHD is the Wechsler Intelligence Scale for Children—Revised (WISC-R) (Kaufman, 1979) or the newer version, WISC III. WISC versions are available for preschool and older youths. The WISC-R offers verbal IQ and performance IQ. The WISC-R measures three relatively independent aspects or dimensions of intelligence: verbal comprehension (comprehension, similarities, vocabulary, and sometimes information), perceptual organization (picture completion, block design, object assembly, and sometimes mazes), and freedom from distractability (arithmetic, digit span, and coding).

Other excellent individually administered tests for assessing intellectual functioning can be used by people who examine children with ADD and ADHD. The fourth edition of the Stanford-Binet Intelligence Scale (Terman and Merrill, 1985), a revision based on six to eight years of work, purports to measure intelligence from age two to adulthood.

The achievement test most widely used in clinical studies is the Wide-Range Achievement Test (WRAT) (Jastak and Jastak, 1984), which is supported by excellent reliability and validity data. National standardized

normative data are available for three age ranges in reading, spelling, and arithmetic. Other widely used tests include the Gray Oral Reading Test—Revised (Weiderhault and Bryant, 1992), the Kaufman Assessment Battery for Children (designed to reduce cultural bias) (Kaufman and Kaufman, 1983), and the Woodcock achievement tests (Woodcock and Johnson, 1991).

Current Research

To conclude the presentation, the Arkansas researchers provided examples of current research that reflected the various areas of assessment and identification of ADD and ADHD not directly related to rating instruments. Issues such as comorbidity, etiology, and neuropsychological functioning account for much of the research on assessment.

- A recent study of twins at the University of Colorado (Pennington et al., in press) found that children with ADHD who are learning disabled are more like children with learning disabilities than they are like children with ADHD. The study revealed that children with ADD only were impaired on activities in an area Pennington et al. refer to as "executive functioning," which includes planning and activities such as reading that combine the use of short- and long-term memory. The children with both ADHD and learning disabilities and those with learning disabilities only showed deficits in phonological processing, not in executive functioning.
- In the same study, ADHD—especially DICA-diagnosed ADHD—was shown to be highly heritable. The researchers found a subtype of ADHD in which children have a spelling deficit. Data indicate that the spelling deficit and ADHD are inherited by the same set of genes. This was confirmed in two different studies in London and Denver.
- The Arkansas group also found an overlap between ADHD and conduct disorders. Eighteen studies said, in effect, that ADHD is distinct from conduct disorder. Several of the studies say that children who have conduct disorder often also have ADHD, but that many children who have ADHD do not have oppositional disorder or

conduct disorder. Three studies indicated that ADHD may be a risk factor for conduct disorder.

Conclusions

The Arkansas group outlined the most promising assessment tools available for diagnosing ADD in children and assessing intelligence in children with ADD and ADHD. In choosing a specific instrument, school personnel responsible for identifying and classifying children with ADD should consider its reliability, validity, and history of use; length and ease of administration; ability to provide a detailed assessment of individual characteristics; and utility in detecting comorbid conditions, such as conduct disorder and oppositional defiant disorder.

In general, structured interviews are somewhat less reliable than other assessment methods, but they are valuable in covering a range of childhood psychopathology, confirming a definition of ADD and ADHD, and pinpointing comorbid conditions. Multiple assessment tools must be used for diagnosing ADD.

A number of recent research studies in the area of assessment of ADD suggest some interesting conclusions:

- Children with ADD may be impaired in their ability to perform "executive functioning" activities, such as planning and reading, which combine the use of short- and long-term memory.
- ADHD may be highly heritable, as suggested by research on a subtype of ADHD in which children exhibit a spelling deficit.
- ADHD may be a risk factor for conduct disorder.

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CHAPTER 3

Characteristics and Educational Placement of Children with Attention Deficit Disorder

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Overview

The University of Miami center synthesized research relevant to assessing and identifying children with attention deficit disorder (ADD) in terms of educational characteristics; the coexistence of ADD with learning disabilities (LD), conduct disorders, and other disorders; procedures for assessing and identifying children with ADD and assessing and identifying preschool children with ADD; and multicultural issues in assessing and identifying children with ADD. Because contemporary views and debate on a definition of ADD followed the publication of the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM-III*) in 1980, the center excluded most pre-1980 publications. As of January 1993, center researchers had reviewed more than 1,300 articles. They found considerable agreement that inattention, impulsivity, and excessive activity levels are essential features of ADD.

People with ADD have many different and widely varying symptoms and characteristics, but research supports at least two subtypes within a broad ADD category: ADD with hyperactivity (ADHD) and without hyperactivity.

ADD often coexists in children with other disorders, including learning disabilities, conduct disorder, oppositional defiant disorder, and mood and anxiety disorders. The research is limited on gender differences among children with ADD. Although little is known about girls with ADD, they may be more likely to display cognitive deficits, while boys' most salient characteristics are behavioral. Manifestations of ADD vary across developmental stages, with higher rates of behavioral problems and cognitive impairment

in adolescents. The association of childhood ADD with antisocial adult behavior may be an artifact of the overlap between ADD and conduct disorder.

Educational characteristics of children with ADD include disproportionate academic failure and retention rates. Academic underachievement is also a characteristic of many children with ADD.

Children with ADD are at risk for negative academic, behavioral, social, and emotional outcomes. Classroom behavioral characteristics include poor attention to academic tasks and disruptive behavior problems. Aggression and other conduct problems, when present, are associated with high rates of school suspension and expulsion. The overlap of ADD, learning disabilities, conduct disorder, and oppositional defiant disorder may lead to referral and subsequent placement in special education for a significant number of children with ADD. Cognitive characteristics that impair learning include attention problems, impulsivity, and disinhibition. Social characteristics include unpopularity, peer rejection and poor peer relationships, and mother-child conflicts, which further complicate the picture educationally.

Educational Classification of Children with Attention Deficit Disorder

Children with ADD who have oppositional behaviors or hyperactivity are more likely to be referred by teachers for special education diagnosis than children who do not have these behaviors. Children with ADD generally are identified later than children with ADHD, which suggests that teachers and parents may overlook children with ADD for referral. Because ADD is often associated with poor academic performance, particularly in mathematics, children with ADD may not be referred until they fail in school. Girls with ADD may be overlooked for referral and generally are under-identified. This suggests a need for more research on gender differences to better understand educational characteristics of girls with ADD, as well as to develop better criteria for their identification.

ADD without hyperactivity may overlap more with learning disabilities than with ADHD because academic underachievement due to inattention is more associated with learning disabilities and with ADD without hyperactivity. Thus, children with ADD without hyperactivity who are referred to special education may meet criteria for placement in programs for learning disabilities. ADHD may overlap more with conduct disorder or oppositional defiant disorder, because hyperactive and aggressive behaviors are often associated with ADHD. When such children are referred to special education, they would be more likely to meet criteria for placement in behavioral disorder programs. However, research suggests that the majority of children with ADD who do not display sufficiently serious academic or behavioral problems to meet the criteria for special education probably will be taught in regular classrooms. However, because of ADD-associated problems, these youngsters may be at risk for grade retention or other adverse long-term effects, and they will likely require accommodations to ensure adequate progress.

Assessment Measures

The primary means for identifying children with ADD are teacher and parent rating scales. A wide range of measures is available, but they vary in the way they define and measure primary manifestations of ADD in children. Some instruments are keyed to DSM criteria, while others are multifactor instruments that measure an array of emotional and behavioral problems including inattention, impulsivity, and hyperactivity. However, in the latter instruments, measurement of the three constructs of ADD can be contaminated by items that assess associated behavior such as aggression, noncompliance, immaturity, and passivity.

Empirically derived comprehensive instruments such as the Child Behavior Checklist (Achenbach, 1986) and Conners Rating Scale (Conners, 1990) are better normed and may be more reliable and valid than briefer instruments that assess only inattention, impulsivity, and hyperactivity. Many newer and more specific scales for assessing children with ADD have smaller normative samples that do not appear to represent schools' social and ethnic diversity. Most instruments have separate norms for boys and girls, but

evidence suggests that some instruments may over-identify boys in relation to girls.

Much progress has been made in developing rating and observational measures to assess the severity of ADD characteristics for children in different home and school situations, which is important for validating the diagnosis of ADD in children.

Center researchers found that observational measures and laboratory tasks used to assess attention and hyperactivity did not correlate well with parent and teacher ratings. This situation is not uncommon, but the issue needs more research. The most important issue concerns the predictive validity of measures for academic outcomes; this evidence is more extensive and positive.

Conclusions

Care must be taken in choosing instruments to assess the characteristics necessary for a diagnosis of ADD in children. Center researchers agree with other authors whose work they reviewed that multiple measures from multiple sources are needed to seek convergent data for identification procedures. Their evaluation suggests that no single approach or measure is sufficient; each has advantages and disadvantages for multiple assessment. Although existing instruments used to identify children with ADD are sufficient for that purpose, it will be necessary for researchers and practitioners in education to apply and extend what is known about educational assessment to plan, devise, and monitor the effectiveness of interventions and accommodations to better meet the needs of children with ADD. This challenge remains and extends beyond what is currently known from literature on children with ADD.

Care must be taken in choosing instruments to assess characteristics of ADD in children. Center researchers agree with other authors whose work they reviewed that multiple measures from multiple sources are needed to seek convergent data for identification procedures.

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Participant Discussion:

Assessment and Educational Placement for Children with Attention Deficit Disorder

In response to the two presentations on assessment, conference participants outlined the need for improvements related to assessment practices and educational placement of children with ADD. Areas of required effort identified include collaboration, research, best practices, health care, funding, communication, training, and costs. The following summarizes participants' input about these issues.

Collaboration

We need more cooperation among school systems, among professional education organizations, and between special and regular educators.

Research

Research should be made educationally relevant and should relate other bodies of knowledge to the developing body of knowledge about ADD. We need more research into best practices, gender differences, cultural diversity, socioeconomic status, and co-occurrence with learning disabilities and other educationally based handicapping conditions. We need concrete recommendations from researchers about implications for treatment and how children with ADD can be helped educationally. Inconsistent identification and assessment may result in the disproportionate placement of minority children in special education. We need more attention to cultural and ethnic norms in making decisions about children with ADD, and more culturally diverse research samples to understand how these tests and procedures work with different populations. Researchers need to focus on the disability range at the end of the continuum *and* on strengths such as attentional capacity. With respect to translating research into educational interventions, effective education practice applies to all students, not just students with ADD. If too much attention is paid to identification and classification, educational intervention may suffer and teachers will not get the help they need to reach students with ADD.

Best Practice

We need to know what best practice is *now*, while recognizing that this will change with research and time. Promising practices should be the basis of research.

Assessment

We need more emphasis on educational concerns, primarily assessment protocols that are comprehensive, ongoing, individualized, task-specific, and situation-specific. Assessment should work from a staged protocol that explains to classroom teachers what they need to know about diagnosis, identification, and intervention; which professionals should be involved at specific assessment levels; what the next stage is (study team or psychologist) and what should trigger the next stage; and when a next stage involves informed consent of the parent when it goes beyond the school system's standard practices. We need to move toward a tiered assessment process, such as the one suggested by Professional Group for ADD and Related Disorders. Such a process should include monitoring prereferral strategies that address youngsters' educational needs and tailored instruction based on an ongoing assessment process. Assessment should lead directly to treatment. We also need more developmental, age-appropriate information on comprehensive assessment. Reviewers could target assessment information needed to design an intervention, monitor the intervention being implemented, revise it as needed, and evaluate outcomes. We need a better review of other bodies of knowledge on assessment that may directly apply to students with ADD. We also need to look at the purpose of assessment in each setting and to consider cost benefits.

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Health Care

We need a health care delivery system that is better educated about children with ADD. This includes primary care physicians, insurance carriers, and health maintenance organizations. We need a health care policy that includes funding for support and treatment of children with ADD. We also need to make sure that information on ADD reaches diagnosticians—those in the field working with children with ADD. We need coordination between education and medicine, particularly in terms of the link between medical diagnosis and education.

Funding

All aspects of research and intervention on ADD need more funding. Policy makers need to support and validate progress to date in the field. For instance,

information on diagnostic procedures' discriminant and predictive validity may help attract funding for assessment.

Communication

We need to present information on children with ADD to each audience in the most effective way and in the most digestible form. Because children exhibit ADD in many settings, families and children are sometimes confused about whether schools, health insurance providers, or other groups are responsible for assessment and treatment. Researchers should also communicate their findings to constituencies in the larger community and disseminate results according to the needs of different audiences.

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Training

Generating information does not change skills—teachers need preservice, in-service, and ongoing training. Such training is the next step beyond disseminating information. Preservice and in-service training should focus on choosing and using instruments to improve instruction. Training is also needed for related personnel and agency personnel who are directly or indirectly involved in the assessment process.

ADD Definition

We need a consensus definition of ADD. Such definitions affect assessment and treatment, which lead to service delivery. We need a consensus on characteristics or elements that make up a useful assessment package. We need to look to local norms for decision making on children with ADD.

Costs

We need recommendations for assessment instruments that are relatively inexpensive.

CHAPTER 4

Educational Interventions for Children with Attention Deficit Disorder

Thomas A. Fiore, Elizabeth A. Becker, and Rebecca C. Nero, Research Triangle Institute, ADD Intervention Center

Overview

The Research Triangle Institute (RTI) center identified and reviewed literature on educational and behavioral interventions for children and youth with attention deficit disorder (ADD). The investigators searched electronic data bases, contacted organizations supporting children with ADD, contacted researchers in the field, and pursued reference trails from research documents. Studies included were empirically based, included subjects with ADD, used interventions relevant to the educational setting, and were methodologically sound. Most studies were conducted after 1980. RTI grouped the studies and findings under seven topic areas, as described below.

Findings

Positive Reinforcement

For decreasing rates of troubling behavior by building desirable behaviors, positive reinforcement procedures (mostly using secondary or token reinforcers) are effective under well-regulated conditions. Researchers have found that simple positive reinforcement programs can help reduce activity level, increase time on-task, and improve academic performance. However, the trained behaviors do not generalize from one setting to another. Some studies indicated that continuous reinforcement works better than partial reinforcement, although others found no difference. Overall, behavior therapy techniques have the advantage of being cost effective, familiar to many educators, relatively easy to implement, and adaptable to different settings.

Educators might consider positively reinforcing desirable behaviors as an initial intervention when developing programs for students with ADD; because trained behaviors do not tend to generalize, educators should train specific behaviors across appropriate settings. They may also find it useful to explore the effects of continuous versus partial reinforcement, adjusting for different situations and children. Finally, they could experiment with both individual and group rewards.

Behavior Reduction

Mildly aversive procedures targeting undesirable behaviors, alone or with a reward program, can help decrease off-task behavior and, to some extent, increase academic productivity. Behavior therapy studies that examined the effects of negative feedback or reprimands on the performance of elementary-age students with ADD found this form of redirection especially effective.

Educators could explore the use of redirection, targeting undesirable behaviors, while positively reinforcing desired behaviors. They could also use short, immediate reprimands to decrease off-task behavior and to avoid longer reprimands.

Response-Cost

Response-cost combines positive reinforcement and redirection by removing earned token reinforcers after undesirable target behaviors are exhibited. Response-cost interventions are especially effective in improving attention to task and increasing completion of academic tasks. Some studies have shown response-cost to be as effective as medication; others have found it particularly effective along with medication. Commercially available electronic desktop devices for recording and deleting points make using such a program practical in a regular classroom. (However, acceptance by target students and classmates has not been adequately examined.)

Response-cost is the most effective behavioral intervention for increasing on-task behavior for students with ADD, and it is a potentially effective way to increase academic productivity. Educators should consider developing response-cost programs for students who do not respond well to positive reinforcement or redirection. The literature suggests that educators may use response-cost confidently with elementary-age students but should carefully monitor its use with older students. They may also find it helpful to explore

the use of commercial electronic recording devices for improving time on-task in regular or special education classrooms.

Self-Instruction or Cognitive-Behavioral Therapy

Cognitive behavioral therapy combines behavioral techniques with cognitive strategies designed to assess directly impulse control, higher order problem solving, and self-regulation. Some evidence suggests that cognitive behavioral therapy may positively affect sustained attention, impulse control, hyperactivity, and self-concept for elementary-age children (although contradictory evidence also exists). In preliminary investigations, correspondence training—a form of self-instruction that rewards correspondence between statements and behaviors—effectively reduced inappropriate behavior; it may give educators a practical school-based technique. But empirical evidence weighs against the efficacy of cognitive-behavioral therapy, which has not consistently shown enough positive effects to recommend its widespread use, especially considering the relatively high staff investment it requires. Still, experienced clinicians see potential in these treatments and call for further development and evaluation.

Educators may not wish to commit significant resources to cognitive-behavioral interventions until researchers have produced more consistent results. Despite the intuitive appeal of these interventions and their success with other populations, educators may wish to use cognitive-behavioral therapy only on a limited, exploratory basis with students with ADD. Such interventions should focus on specific behavior associated with school problems, and educators should not expect training to generalize. Educators could try using correspondence training, which seems to be an efficient and practical intervention in school settings.

Biofeedback

Research on using relaxation techniques and biofeedback with children with ADD has waned, although preliminary results indicated that such procedures had positive effects. However, most results reported were based on extended treatments in clinical or laboratory settings. Relaxation treatments may have potential in schools, but they have not been adequately tested in school settings. Compared with biofeedback, other treatments may be equally effective, more efficient, and more appropriate for educators.

Educators should be skeptical about generalizing clinical biofeedback treatment effects to school settings, and any biofeedback should be supervised by a knowledgeable professional with a plan for monitoring outcomes. Muscle tension feedback is more practical than brain wave feedback for treatment in schools and may be worth exploring for certain students in controlled situations. Educators might explore relaxation therapy, which is most applicable as a school-based intervention, for individual students.

Task Stimulation

Most recent research on task stimulation has been based on optimal stimulation theory and has looked at ways to increase, not decrease, stimulation. Increased stimulation focuses on salient features of materials and instruction. Using simulated instructional activities or materials, investigators have varied color, presentation rate, and response activity and have shown improved performance and behavior for students with ADD. This application of optimal stimulation theory shows promise for finding academic treatments based on optimally stimulating instruction and materials that may be unique to students with ADD.

In developing instructional materials for students with ADD, especially with rote learning tasks, educators could try adding color to salient features and, especially toward the end of the task, increasing novelty. In planning instruction, educators could explore the effects of varying presentation rates and detail level on the comprehension of students with ADD. Educators may also find it useful to explore ways for students to actively respond during academic tasks, or they may consider providing alternative motor activities.

Parent or Family Training

Literature on interventions for children with ADD provides many examples of moderately successful training programs with parents of elementary-age children, usually designed to extend or enhance clinical treatment. For most studies, training consists of behavioral strategies applied to home problems or designed to support school- or clinic-based interventions. Such training has effectively reduced some activity levels, conflict, and anger intensity, and increased on-task behavior and compliance. Several studies reported reduced parent stress or improved parental perceptions of the quality of parent-child interactions after parent training. Behavioral parent training is a standard

component of multimodal interventions, which have shown some success across various outcomes. Clinic-based mental health professionals usually train parents.

As an adjunct to other interventions, educators could collaborate with experienced clinicians in offering parent training programs. Such training should include information on children with ADD but should focus on behavioral strategies. To make sure parent training affects school behavior, school-based training could use strategies that foster home-school collaboration, such as home contingencies for school performance and techniques that encourage students to complete homework.

Conclusions

Research on nondrug interventions for students with ADD does not offer compelling evidence for any one treatment. The literature is exploratory, not prescriptive, but several interventions are recommended with guarded optimism.

Research on nondrug interventions for students with ADD does not offer compelling evidence for any one treatment. The literature is expioratory, not prescriptive, but several interventions are recommended with guarded optimism.

Behavior therapy can help if it is implemented properly, which means paying attention to counting and measuring behaviors and adjusting procedures on the basis of the results. Behavior therapies include simple positive reinforcement, probably using continuous reward schedules and perhaps mixing group and individual rewards. Redirection, especially in the form of brief reprimands, is another potentially useful approach. There is some reason to believe that mild reprimands or redirection are superior to ignoring undesirable behavior. Response-cost effectively combines reinforcement and redirection for students who need more structure. If they are used sensitively, commercially available electronic devices might make a response-cost program easier to implement.

Across all behavior therapy, training is required in specific settings. There is little support for generalization across settings. Cognitive behavioral therapy might be worth exploring if it is designed specifically for and implemented in a school setting, for a school-related purpose. At this point,

correspondence training looks more promising for school because it is easier to implement, requires less staff training, and ultimately is less costly. Parent training may work if the primary emphasis is on teaching parents behavioral strategies with a secondary emphasis on information on ADD, and if the training extends or supports other school-based intervention. Task stimulation is highly promising and eventually may help direct the development of instruction and instructional material for children with ADD, using strategies such as systematically varying rates of presentation, colors, and levels of detail. Multimodal programming, including child, family, and school interventions, may prove to be the most promising approach.

More research is needed to examine how well interventions that seem to be effective in clinical settings actually work and how well they hold up in school. Interventions that have been effective with elementary-age students need to be tested with adolescents and preschoolers. We also need research on whether interventions are equally effective across race, gender, and socioeconomic status. We do not have studies on using computers and other technologies to help children with ADD learn academic material. We need to know whether interventions that are effective with other children with disabilities are effective with children with ADD, and how these interventions might be modified. We also need to know how parents, educators, and other professionals can collaborate—how responsibility can and should be shared among schools, social agencies, and medical professionals.

Excerpted from:

Fiore, T.A.; Becker, E.A.; and Nero, R.C. *Research Synthesis on Education Interventions for Students with ADD.* Research Triangle Park, NC: Research Triangle Institute, March 1993.

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Participant Discussion:

Educational Intervention for Children with Attention Deficit Disorder

Conference participants outlined the need for further efforts to develop educational interventions for children with ADD that recognize the responsibility of educators and administrators, involve collaboration between general and special educators, and focus research on strategies for classroom instruction, effective teaching techniques, diagnosis, and other interventions.

Educational Intervention

Teachers need to make decisions about children with ADD through a cooperative teaching model that offers varied levels of intervention. The first level should focus on defining and assessing the issues of children with ADD. The second level should involve teacher assistance teams and cooperative collaborations so teachers feel supported. A third level should involve a multidisciplinary child study team, including medical professionals, educators, and mental health professionals. A fourth level should involve implementing solutions.

Collaboration

Regular educators think only special educators can serve children with ADD. We need mechanisms for special and regular educators to work together and to explore the relationship between general education reform and serving students with ADD. This requires good preservice and in-service training and a better national focus on staff development practices for regular education, including more university involvement in some of these special strategies. While changes in education for all students seem to offer opportunities for better serving students with ADD, we must make sure the special needs of these students are met.

We need research on effective interventions, including those used for students with other disabilities. We need to ensure that all options, including regular and special education, are available for children with ADD. We need more research on accommodations versus interventions, especially regular education class accommodations.

Research

We need more research on the problematic behavior and characteristics of students with ADD. We also need research on effective interventions, including those used for students with other disabilities. We need to ensure that all options, including regular and special education, are available for children with ADD. We need to make sure information about interventions

that do not work is communicated to educators. We need more strategies that work at different ages, particularly for preschoolers and adolescents. More research is needed in classroom settings rather than clinical settings. We need more research on accommodations versus interventions, especially regular education class accommodations.

Strategies

We need more appropriate behavioral intervention models that work within the classroom. We need to better understand who is responsible for solving problems of children with ADD—medical professionals, educators, mental health professionals, parents—and then provide an organized, tiered approach to evaluation and support. Once solutions are found, they must be implemented in the classroom. There is a need to develop better programs or models with appropriate monitoring and follow-up.

Teaching

We need to examine effective teaching techniques ***and*** teachers—which teachers are effective with which children. It may be useful to consider how children are matched with teachers. The school principal plays a key role in this and other issues. We need to make sure classroom teachers get support and that they receive helpful information. Classroom teachers also need help in the classroom, perhaps from a collaborator who has expertise in working with students with ADD.

Diagnostic Labels

We need diagnostic labels, because they guide service delivery models, help families, and influence classroom placement. Documentation given through clinical evaluation helps the multimodal intervention approach work.

CHAPTER 5

Medical Intervention for Children with Attention Deficit Disorder

James Swanson, Ph.D., University of California, Irvine, Attention Deficit Disorder Center

Overview

The University of California, Irvine (UC-Irvine) Attention Deficit Disorder (ADD) Center reviewed a collection of reviews of the literature on using medication to treat children with ADD. Stimulant medication is the primary class of psychotropic medications used to treat children with ADD. This class includes methylphenidate (Ritalin), d-amphetamine (Dexedrine) and pemoline (Cylert). The use of stimulants is widespread and has been standard clinical practice for at least a quarter of a century. According to one review (Jacobvitz et al., 1990), in some areas recent surveys showed that about six percent of public school students (about 10 percent of boys) receive stimulant medication. Another review (Whalen and Henker, 1991) revealed that 60 percent to 90 percent of children diagnosed with attention deficit hyperactivity disorder (ADHD) receive stimulant therapy for extended periods during their time in school.

This psychopharmacological treatment of children is common, controversial, and perceived to be effective. There is overwhelming evidence for the short-term (seven to 18 weeks) impact of stimulants on attention and behavior.

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Findings

The UC-Irvine researchers highlighted recent reviews that sought to answer questions about the limitations of medication's effects on school behavior and performance and about stimulant medication's effects on the academic performance of children with ADHD. They also examined the effects of stimulant medication on aggression in children with ADHD. The UC-Irvine group's synthesis addresses five critical topics concerning the research reviews in this area that cover a half century of work. First, the *invariant findings* in the literature reviews are extracted. Second, the *effects of stimulant medication* are identified, on the basis of agreements across multiple reviews in the literature. Third, the *persisting controversies* about the clinical use of medication are specified and related to authors' philosophical differences, rather than their different views of medication's effects. Fourth, the *boundary conditions* that may limit the immediate and long-term effects of stimulant medication are defined. Fifth, some of the *unanswered questions* about the effects of stimulant medication on children with ADD which are now under investigation are specified. Following is a brief summary across the reviews.

What are the limitations of stimulant medication treatment? (Swanson et al., 1992)

Center researchers drew the following conclusions:

- Long-term beneficial effects have not been verified by research.
- Short-term effects of stimulants should not be considered a permanent solution to chronic ADD symptoms.
- Stimulant medication may improve learning in some cases but impair learning in others.
- In practice, prescribed doses of stimulants may be too high for optimal effects on learning, and the length of action of most stimulants is viewed as too short to affect academic achievement.

Can short-term gains from medication be translated into long-term academic improvement? (Carlson and Smith, in press)

Carlson and Smith concluded that

- There was clear evidence of short-term improvement in performance on academic tasks in the laboratory and in the classroom.
- Thorough medical evaluations should be performed for each child. Then standard procedures should be used to administer "real-life" academic tasks, and the results should be communicated to a physician, who would determine an appropriate medication dose and frequency of administration.

What is the role of stimulant medication in reducing aggressive behavior? (Hinshaw, 1991)

Hinshaw concluded that

- In clinical practices, stimulants are frequently prescribed to manage disruptive behavior.
- Stimulants have small effects on performance in laboratory or playroom settings, but large effects on naturalistic observations of aggression in the classroom or playground.
- Any short-term improvement of aggression with stimulant medication is likely to be counteracted by medication compliance problems, length-of-action problems (resulting in periods when the medication is not acting in peer and neighborhood environments), and the continuous stressful interchanges associated with low socioeconomic status and difficult family environments.

Conclusions

The UC-Irvine ADD Center's "review of reviews" derived the literature basis for what we know and what we do not know about the effects of psychotropic medication. This knowledge, appropriately presented, could provide a guide for parents, teachers, and clinicians about the effects of medication when it is used to treat children with ADD or ADHD.

Parents and teachers of children with ADD or ADHD can expect the following results from stimulant medication:

- *A beneficial clinical response* in only 70 to 80 percent of diagnosed cases.

- *Temporary management of diagnostic symptoms*, including an improved ability to modulate motor behavior, increased concentration or effort on tasks, and improved self-regulation.
- *Temporary management of associated features*, including increased compliance and effort, decreased physical and verbal hostility, decreased negative social interactions, and increased amount and accuracy of work when performing previously learned skills.
- *No paradoxical responses*. Normal children and normal adults treated with these medications, like children with ADD treated with the medications, respond with decreased activity and increased concentration (although their responses may be smaller in magnitude).
- *Uncertainty about responses*, since the beneficial clinical response cannot be predicted by neurological signs, physiological measures, or biochemical markers.
- *Side effects*, including the appearance of or an increase in tics (infrequent), eating or sleeping problems (frequent), and (at high doses) possible negative psychological effects on cognition and attribution and possible growth inhibition.
- *No large effects on skills or higher order processes*—Teachers and parents should not expect significantly improved reading or athletic skills, positive social skills, or learning of new concepts.
- *No improvement in long-term adjustment*—Teachers and parents should not expect long-term improvement in academic achievement or reduced antisocial behavior.

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Swanson, J. *The Effects of Medication on Children with Attention Deficit Disorder: The University of California at Irvine ADD Center's Review of Reviews*. Irvine, CA: University of California at Irvine, 1993.

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Participant Discussion:
Medical Interventions

Conference participants outlined the need for additional work concerning medical interventions for children with ADD through training, team models, drug effects, communication, and parental choices. Their input is summarized below.

Training

In-service training is needed for teachers and paraprofessionals on medication issues. Policies for administering medication should be consistent geographically across states and school districts. Teachers should be able to monitor students on medication and give feedback to physicians, but they need more accurate information to do this.

Team Models

We need to define the role of schools in medically managing ADD. Teachers need to know what kinds of observations they should make and how to work with physicians. Physicians need to know how children are responding to medication. Participants strongly recommended a team model as the best way to coordinate medical management, and they recommended a total-treatment approach. Medication is not a total treatment—we need multimodal treatments. We need a focus on the educational impact of medication. We also need more collaborative work between the academic and health care communities.

Participants strongly recommended a team model as the best way to coordinate medical management, and they recommended a total-treatment approach. Medication is not a total treatment—we need multimodal treatments. We need a focus on the educational impact of medication.

Drug Effects

We need more information about medication effects by age, subtype, and comorbid disorders and about actual effects on cognitive versus behavioral abilities. We need information about the role of teacher feedback to doctors and the interface between doctors and schools. We need to develop educational measures for examining optimal medication effects, while considering that parents, teachers, and health care professionals are looking at different outcomes, including long-term versus short-term effects. We need information about promising practices and about the relationship between medication and other interventions, especially educational interventions. We

need a consensus about outcome measures and medication response, possibly across settings.

Communication

We need to make sure that health professionals, particularly pediatricians, receive information about children with ADD. Participants recommended producing fact sheets that define treatment goals in light of medication outcomes, that outline what to expect and what not to expect from medications, and that are geared to both parents and teachers. We need to discourage extreme positions on medication and to develop good literature on linking intervention and medication. Schools without school nurses need policies about who will handle medication treatment. We need training for teachers and the network of caregivers about medication. We need fact sheets tailored to parents, educators, clinicians, and the mass media. We need to make clear the need for comprehensive assessment and the need to talk and learn about medical management and monitoring.

Research

We need funding for research on medication effects on academic performance and achievement, effects on self-esteem, and guidelines on how schools should approach this issue. We need more information on the relationship of dosage to other modalities and on the value of double-blind treatments. We need to know whether medication should be the first or last treatment effort. And finally, we need information and research on the similarity of ADD and Tourette's syndrome.

Choices

Parents should have the right to make choices in the face of disagreements. We need to study the difficulties of dispensing medication in a school setting, including confidentiality issues and school policies. We need more information on long-term effects and on ADD as a chronic condition. We need to know whether variation in service delivery systems is a function of socioeconomic status. And we need development efforts for medications that are longer acting, that have fewer side effects, and that benefit all children with ADD.

CHAPTER 6

Participant Discussion: Information Dissemination and Product Development

Near the end of the conference, researchers and clinicians, practitioners and association representatives, and parents met in separate groups to develop recommendations for disseminating and exchanging information on children with attention deficit disorder (ADD) that would reflect their unique perspectives as stakeholders.

Researchers and Clinicians

- Researchers and clinicians can help refine, give a perspective to, and add to the syntheses presented at the conference.
- Researchers and clinicians can help identify and define gaps in the literature.
- Researchers and clinicians can translate expert information for consumption by teachers, educators, and parents.
- Researchers and clinicians can agree upon and recommend a protocol for assessing children with ADD. This should be done when they can recommend procedures that would be part of the assessment process itself—using rating scales, for example, without specifying which scale to use. The recommendation process can include making a distinction between best practices and current practices, defining best practices that are backed by research information, and identifying areas in which current practices are not very promising.

Educational Practitioners and Associations

This group categorized its comments into the areas of awareness, information, and support. These areas were further classified by audience, needs, and how to meet needs.

Awareness

The educational community should be our primary focus.

Audience. The audience for information on children with ADD includes state departments of education; school administrators; district-level and school-level employees including classroom teachers, cafeteria workers, bus drivers, and janitors.

Needs. Participants wanted to see more effort to place the foundation of this work in the general school reform movement. Children with ADD have special needs, but reform in the area of ADD is coming from the same motivation that propels the reform movement.

Meeting needs. This effort should now be educationally driven. Clinically driven research has provided a good base and should be continued, but the field needs to move toward educationally driven materials that focus on classroom activities.

Information

Research needs to be targeted at practical interventions.

Audience. The audience includes everyone who needs to know more about the characteristics and needs of children with ADD.

Needs. We need field-identified and field-initiated research. We also need to open up school districts to researchers. It is difficult now for people to get into school districts to do research in the classroom.

Meeting needs. We need to identify remaining research questions and study the research agenda.

Support

Educators and parents need proper training and support in order to assist children with ADD.

Audience. The audience consists of people who are concerned with issues of collaboration and ways to use consultation and instructional support personnel.

Needs. At the university level, we need to make an impact on teacher education and teacher training. Serving children with ADD requires properly preparing new teachers as well as working with existing staff.

Meeting needs. We need to help teachers, parents, and administrators feel supported. We can do this by building a consortium of people with all of these groups' interests at heart to benefit children with ADD.

Parents of Children with Attention Deficit Disorder

- We must reach out to multiple audiences, including those in special and regular education, to make sure people understand the families and children at risk. We need to provide the media with high-quality, validated material. These media include publications at state and local levels: professional journals, special and regular education periodicals, and popular publications.

We must reach out to multiple audiences, including those in special and regular education, to make sure people understand the families and children at risk. We need to provide the media with high-quality, validated material. These media include publications at state and local levels: professional journals, special and regular education periodicals, publications and popular publications.

- Videos are a powerful tool for use in training and teleconferencing. Parents can use videos at the local level in schools and at the state level to disseminate information about children with ADD.
- We need to make sure colleges and postsecondary institutions receive information so they can deal with students with ADD. We need to encourage them to provide preservice training. We want to ensure that physicians, particularly pediatricians, also receive information on ADD.
- We need to be able to accommodate multiple audiences by developing different kinds of information for each audience.
- We think it is most important that teachers, who are responsible for creative problem solving in the classroom, receive training and support.
- We need to ensure that accurate information reaches the local level. Researchers should not be the authors of this information—we need authors who understand our broader readership. Parents want a part in the editorial process for these materials.
- Local organizations need to develop linkages with other groups, including disability groups such as the Learning Disabilities Association, that encourage parents to lobby for their organizations at local and state levels, asking passionately, "What are we doing for these kids?"

- Parents need information from the Department of Education about how to access funds for training and communication that, in parents' hands, could be a powerful tool for conveying information.

CHAPTER 7

Related Initiatives for Children with Attention Deficit Disorder

A final panel of representatives from organizations involved with attention deficit disorder (ADD) research, education, training, and information dissemination described their organizational initiatives. Their presentations were intended to educate the diverse forum audience about their organizations' efforts in order to more closely link the community of constituents committed to educating children with ADD.

Children with Attention Deficit Disorders (CHADD)
Mary Fowler, Vice President, Federal Affairs

CHADD, formed in 1987, is a national nonprofit organization of parents, health care professionals, and educators. CHADD works through family support, advocacy, and public and professional education, and it encourages scientific and educational research.

CHADD's National Education Committee undertook the project of producing an educators' manual (see Chapter 2) to give the field a review of ADD from an educational perspective. The manual examines current knowledge and information and identification, assessment, and intervention practices in education. Topics include a clinical description of ADD; academic and social difficulties; factors that constitute learning; identification and assessment; principles and practices of intervention; behavioral interventions; parent and school collaboration; and a brief summary of legal issues related to ADD.

National Association of State Boards of Education (NASBE)
Virginia Roach, Director, Center for Teaching and Learning

For two years, NASBE has helped state boards examine special education and its relationship to general education and the education reform movement. Currently, in many states, children with disabilities are not automatically considered in discussions about educational reform. NASBE began its work for several reasons. Among them was the increasing tension between general and special education and among different factions of special education. These tensions are often manifested in battles in the state legislatures over which group gets funds, with the understanding that there is always a loser. Other concerns over the overall outcomes of education for both typical and special students, fiscal restraints, and the pressure on the education system to create higher standards of achievement also led NASBE to examine special education in light of the general education reform movement.

NASBE's primary conclusion is that schools are mismatched to the clients they serve—children. That is, there is a need to move the entire system from a focus on the processes of education and teachers to a focus on the outcomes of education and student learning. In NASBE's report, *Winners All: A Call for Inclusive Schools*,[1] three areas of systemic reform are laid out:

- NASBE seeks to create a new definition of what schools are about. In the last five years, 32 states have broadened their goals of education for students. Some state boards are looking at a three-part meaning of education: the traditional academic part; the social and emotional well-being of children at school; and social and collective responsibility, that is, citizenship. The premise of this new vision is that all schools are for all children. In terms of special education, every policy that comes before a state board would be considered in terms of its impact on all children.
- Teacher support and development is pivotal. We cannot expect to serve a diverse population of students in general classrooms without

[1] Roach, Virginia. *Winners All: A Call for Inclusive Schools*. Alexandria, VA: National Association of State Boards of Education, 1992.

providing adequate teacher support, from the preservice level through in-service and ongoing teacher activities. At the state level, we can help change teacher certification requirements, program approval requirements for teacher education programs, state in-service programming, and ongoing assistance to professionals. We can help states redirect their professional development dollars and show them how to redirect services throughout their districts to focus on ongoing, teacher-generated professional development that emphasizes the teacher's actual work environment.

- In terms of funding, when we spend time in the state legislature and at the governor's office and with state board representatives talking about how we are going to parcel out money by labels, we are not helping one child. We must look very carefully at support and services to children, not at how to spend more resources labeling children.

One of NASBE's most important functions is to create and hold national forums where those involved can talk about issues in special education. NASBE has found that it is most helpful for state policy makers to have a forum where they can hear and discuss such information in greater depth with a broad array of stakeholders. NASBE is interested in developing the capacity of state board members to discuss these issues and to think about policy options for the future.

Council for Exceptional Children (CEC)

In the summer of 1991, CEC's Committee on Advocacy and Governmental Relations created a task force to examine issues surrounding children with ADD in schools. The task force was charged with gathering as much relevant information as possible to develop a practical, comprehensive document that could be used to guide CEC policy and as a resource for parents, educators, and others concerned with the education of children with ADD in our schools.

The task force obtained information for its booklet, *Children with ADD: A Shared Responsibility*,[2] through a variety of avenues, which included written and verbal information supplied by outside consultants, published sources, a written survey of parents attending a CHADD conference in Washington, D.C., and a public hearing.

CEC states that the recommendations and interventions contained in the booklet are not necessarily the "best" practices, nor are they intended to represent the full range of interventions and practices currently being used with children with ADD in our schools today. However, the booklet reflects the thoughts and advice of parents, professionals, and leaders from the field of special education regarding what they believe to be appropriate components of effective school programs for children with ADD.

National Institute of Mental Health (NIMH)
Peter Jensen, Ph.D., Chief, Child and Adolescent Disorders

NIMH is supporting a five-year, six-site, collaborative study of multimodal treatments for children with attention deficit hyperactivity disorder (ADHD) and ADD. The primary question addressed by the study is, "Does medication combined with psychosocial therapies work better in children with ADHD over the long run than no treatment, medications alone, or psychosocial treatments alone?" The Office of Special Education Programs is collaborating with NIMH on the study.

Principal investigators are C. Keith Conners, Ph.D. (Chair), Duke University Medical Center, Durham, NC; Howard Abikoff, Ph.D., Long Island Jewish Medical Center, New Hyde Park, NY; Laurence Greenhill, M.D., New York State Psychiatric Institute, New York, NY; Stephen Hinshaw, Ph.D., University of California, Berkeley, CA; William Pelham, Ph.D., Western Psychiatric Institute, Pittsburgh, PA; and James Swanson, Ph.D., University of California, Irvine, CA.

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[2] Council for Exceptional Children. *Children with ADD: A Shared Responsibility*. Reston, VA: Council for Exceptional Children. 1992.

Office of Special Education Programs (OSEP) Division of Personnel Preparation, Suzanne Martin, Ph.D., Education Program Specialist

The Division of Personnel Preparation supports several federally funded projects in the area of personnel preparation for teachers of children with ADD. These teacher training projects include the following:

- **University of Alabama**—A five-year project to prepare administrators, general and special education teachers, and parents to meet the needs of children with ADD.
- **University of Georgia**—A program to develop an ADD network (ADD NET), a series of satellite-based telecasts on educational interventions for children with ADD, featuring nationally recognized scholars.
- **University of Arizona**—Project ADEPT (ADD Education for Professionals and Teachers), which is designed to develop, implement, evaluate, and disseminate innovative preservice and in-service personnel preparation models for regular and special educators.
- **University of Kentucky**—A graduate training project to prepare school psychologists to serve children and youth with ADD.
- **Lehigh University**—The Regional Consulting Center for Early Adolescents with ADD to provide in-service training, consultation services, and dissemination of the model program.
- **University of Massachusetts**—A competency-based in-service training curriculum for general and special elementary education teachers to improve the social skills, relationships, and competence of children with ADHD.
- **University of North Carolina at Chapel Hill**—A project to develop, evaluate, and disseminate curricula and materials about ADD that can be used for preservice and in-service training of general and special educators.
- **Arkansas Children's Hospital Research Center**—A program to develop, evaluate, and distribute a model in-service training program

on ADD for special education teachers, regular classroom teachers, and related personnel.

- **University of Miami**—A project to develop an in-service training program for special and general educators, administrators, and related services personnel to enhance their knowledge and skills about the educational needs of students with ADD.
- **Kansas State Board of Education**—A statewide model of personnel preparation, including curriculum materials, to enhance the skills of general and special education teachers and administrators to serve children and youth with ADD.
- **Jewish Association for Attention Deficit Disorder**—Training models for teachers, school-based support teams, administrators, parents, and children.
- **Council for Exceptional Children**—A continuing education project to provide professional development opportunities and products that enhance the skills of special and general educators to serve students with ADD.
- **Purdue University**—A project to develop in-service curriculum materials for working with youth with ADD at different severity levels and ages, as well as training modules used to train teacher-educators.

Division of Innovation and Development (DID)
Tom Hanley, Ed.D., Senior Research Analyst

An important part of DID's Research in Education of Individuals with Disabilities Program is to identify eight instructional practices that seem to have exceptional potential to improve educational outcomes for children and youth with ADD. These promising instructional practices will be chosen on the basis of expert opinion, empirical findings reported in the literature on ADD or in other independent research, and the identified classroom needs of children and youth with ADD.

DID will identify up to 12 sites at which one or more of the eight promising practices are used. Two research analysts will spend five days at

each site to collect information needed to investigate the practices and identify the contextual conditions that support practices.

After completing the site visits, DID will analyze the data for answers to questions such as these:

- How satisfied are teachers and parents with these educational practices for children with ADD, and to what extent do they believe they have enhanced the educational performance of these children?
- What are the educational attainments of children with ADD before and after they are exposed to the practices?
- How does the educational attainment of children with ADD who are exposed to the practices vary among locations and environments?

A report describing the practices and their impact will be prepared and disseminated widely.

APPENDIX

Participant List: Forum on the Education of Children with Attention Deficit Disorder, Washington, D.C., January 27–29, 1993

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